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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/930,361	08/15/2001	Kazuaki Ano	TI-33184	3433

23494 7590 05/16/2002

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EXAMINER

LANDAU, MATTHEW C

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 05/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/930,361

Applicant(s)

ANO, KAZUAKI



Examiner

Matthew Landau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 12-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 8 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "said chips" in line 27. There is insufficient antecedent basis for this limitation in the claim.

Claim 11 recites the limitation "said package" in line 16. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, and 4-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson.

In regards to claim 1, Figure 6 of Johnson discloses a reel-to-reel tape 1 having first and second surfaces comprising: a plurality of contact lands and conductive routing lines integral

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with said first surface of said tape; and a chip mount pad 10 secured to said first surface, coplanar with said second surface.

In regards to claim 2, Figure 6 of Johnson discloses a reel-to-reel tape 1 having first and second surfaces and first and second openings, for use in the assembly of semiconductor chips, comprising: a plurality of electrically conductive routing lines and a plurality of contact lands on said first surface, covering said first openings in said tape; and a chip mount pad 10 in each of said second openings, attached to said first surface and shaped to be coplanar with said second surface.

In regards to claim 4, the presence of the process limitation “created by a photolithographic patterning and chemical etch process” does not patentably distinguish over prior art, therefore cannot impart patentability to the product.

In regards to claim 5, the presence of the process limitation “provided by a mechanical coining process” does not patentably distinguish over prior art, therefore cannot impart patentability to the product.

In regards to claim 6, the presence of the process limitation “created by a mechanical punching process” does not patentably distinguish over prior art, therefore cannot impart patentability to the product.

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Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson in view of Ikegami.

The difference between Johnson and the claimed invention is the routing lines and contact lands made of copper foil plated with nickel and gold. Ikegami discloses a pad electrodes formed by etching copper foil and further plated with nickel and gold (see column 1, lines 55-60). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Johnson by using copper foil plated with nickel and gold for the wiring pattern. The ordinary artisan would have been motivated to modify Johnson in the manner described above for the purpose of preventing corrosion and enhancing the electrical conductivity.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson in view of Nakashima et al.

Figure 6 of Johnson discloses a low-profile, high power semiconductor device including: a plastic tape 1 having first and second surfaces; first and second openings through said tape with the first openings configured for solder balls 7 and the second openings configured to

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accommodate circuit chips 6; a copper foil 10 in said second opening mechanically shaped into a position coplanar with the second surface; circuit chips mounted by means of a thermally conductive material 15; and an encapsulating material 16 surrounding the chips 6. The difference between Johnson and the claimed invention is an adhesive layer on a portion of the first surface, with the copper foil laminated on the adhesive layer. Nakashima et al. discloses a copper foil bonded to a flexible film by way of an adhesive layer (see column 2, lines 1-4). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Johnson by placing an adhesive layer on a portion of the first tape surface. The ordinary artisan would have been motivated to modify Johnson in the manner described above for the purpose of securely attaching the copper mount pad to the first surface of the tape.

8. Claim 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson in view of Freyman et al.

In regards to claim 8, Figure 6 of Johnson discloses a low-profile, high power semiconductor device including: a plastic tape 1 having first and second surfaces; a plurality of electrically conductive routing lines and a plurality of contact lands on said first surface, said lands exposed by first openings in said tape; second openings in said tape configured to accommodate the chips; a chip mount pad 10 in each of said second openings, attached to said first surface and shaped to be coplanar with said second surface; a circuit chip 6 mounted by means of a thermally conductive material 15 on the chip mount pad; encapsulating material 16 surrounding said first tape surface; and solder balls 7 attached to each of the exposed lands. The

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difference between Johnson and the claimed invention bonding wires connecting said chip to said contact lands. Figure 7 of Freyman et al. discloses bonding wires 701 connecting the chip 41 to the contact lands 205, with an encapsulating material 61 surrounding the chip and bonding wires. In view of such a teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Johnson by using bonding wires. The ordinary artisan would have been motivated to modify Johnson in the manner described above for at least the purpose of electrically connecting the chip to the circuitry.

In regards to claim 9, Figure 6 of Johnson discloses chip mount pads 10 which provide a direct thermal path to the circuit chips 6.

In regards to claims 10, the presence of the intended use limitation "...chip mount pads serve as a heat convection surface..." does not structurally distinguish the over the Johnson reference, therefore cannot impart patentability to the claimed device.

In regards to claim 11, the presence of the process limitation "created by a transfer molding process" does not patentably distinguish over prior art, therefore cannot impart patentability to the product.

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Conclusion


9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Katsuya discloses a downset chip mount pad secured to a first surface of a tape and coplanar with a second surface of the.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew C. Landau whose telephone number is (703) 305-4396.

The examiner can normally be reached on 8:00 AM-4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Matthew C. Landau

Examiner

May 10, 2002